

REMARKS

In response to the Official Action mailed November 20, 2003, Applicants amend their application and request reconsideration. No claims are added and claims 2 and 12 are cancelled so that claims 1, 3-10, 13, and 14 are now pending. Of these claims, claims 5 and 6 are currently withdrawn from consideration based upon the species election requirement and election. Claim 1 is clearly generic as to those claims, and upon the allowance of claim 1, claims 5 and 6 should be rejoined to the prosecution.

The Examiner objected to the drawings as improperly cross-hatched. Only some of the drawings are sectional views. However, many of the drawings contain fully black areas which are sometimes objected to. In order to resolve all drawing issues, a complete replacement set of drawings is submitted. The new drawings are free of entirely black areas and those figures that include cross-sections are shown with proper hatching lines.

The Examiner pointed out, in a claim objection, the improper dependency of claim 10. The proper dependency is supplied in the foregoing amendment.

Claims 4 and 10 were rejected as indefinite because of the use of the relative phrase "high melting point". That phrase no longer appears in those two claims.

In this Amendment, examined claims 1 and 2 are combined as amended claim 1 and examined claims 9 and 12 are combined as amended claim 9.

The invention is directed to a coupling element, and structures including the coupling element, that provides an electrical connection between two electrically conducting elements. The coupler allows increased flexing between the elements, particularly in response to changes in temperature, because the coupler includes a resin body that has, on part of its surface, an electrically conductive member. In some examples, the electrically conductive member consists of interconnected areas. In other examples, the electrically conductive member consists of a band of a metal or metal powder, with or without a joining metal film, that encircles a part of a spherical resin body of the coupler.

Examined claims 1, 3, 4, 7, 9, and 10 were rejected as anticipated by Takezawa et al. (U.S. Patent No. 6,465,082, hereinafter Takezawa). This rejection is respectfully traversed.

In view of the combination of examined claims 1 and 2, and of examined claims 9 and 12, this rejection is moot. Nevertheless, the distinction from Takezawa is discussed.

Takezawa describes a coupler for coupling electrically conductive elements in a way that permits movement in response to stresses, such as thermal stresses induced by

temperature changes. However, the fundamental structure of the Takezawa coupler is very different from that of the claimed invention. According to the description in Takezawa in column 6, lines 10-41, the Takezawa coupler is prepared by dispersing throughout a resin material a filler, such as copper or silver powder. The resin is particularly identified as material that shrinks upon curing so that the metallic filler is compressed to reduce the resistance of the electrical connection provided through the volume of the coupler. See Takezawa at column 6, lines 42-63. There is no discussion in Takezawa as to the surface conduction or condition of the Takezawa coupler.

By contrast with the coupler of Takezawa, in the coupler according to the invention, particularly as defined by the claims now pending, the electrically conductive member occupies 20% to 80% of the surface of a resin body. That structure is substantially different from the structure of Takezawa's coupler in which the electrically conductive metal powder is dispersed throughout the volume of the resin. In a coupler according to the invention, electrical connection is reliably provided by the electrically conducting member. In Takezawa's coupler, the electrical connection through the volume depends on whether the internal metal grains are in contact to provide a conductive path. Because of these differences in structure, the coupler according to the invention more reliably establishes an electrical connection between two electrically conductive elements than does Takezawa's coupler. The invention does not depend upon the compression of a conductive powder within the body of a resin with appropriate exposure of the powder at surfaces of the coupler in order to establish the desired electrical connection.

Because of the substantial differences between the structure of a coupler according to the invention and the structure of the coupler described by Takezawa, no claim now pending is anticipated by Takezawa.

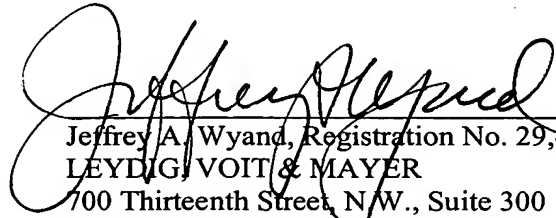
Claims 2, 8, 12, and 14 were rejected as unpatentable over Takezawa in view of Roldan et al. (U.S. Patent No. 6,005,292, hereinafter Roldan). This rejection is respectfully traversed as to amended claims 1, 8, 9, and 14.

Roldan was only cited only with respect to the percentage of the surface area covered by a coating and that the resin body is a thermoplastic resin. Roldan, like Takezawa, describes a connection element that includes a resin throughout which is dispersed an electrically conductive material. Roldan does not disclose or suggest a resin body with a partial, electrically conductive surface member. Therefore, no combination of Takezawa and Roldan can include all of the elements of a coupler according to the invention. Thus, the combination of Takezawa and Roldan cannot establish *prima facie* obviousness of any pending claim.

In re Appln. of TOYOSHIMA et al.
Application No. 10/014,886

Reconsideration and allowance of all of the pending claims, including the two claims previously withdrawn but depending from an allowable claim, are earnestly solicited.

Respectfully submitted,


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